priority classes to be used for contending stations, wherein the N-number of priority classes are created by partitioning a set of signal frequencies available for the physical layer into M-number of partitions, wherein each partition includes a contiguous range of signal frequencies from the set of signal frequencies and each frequency in the contiguous range of signal frequencies represents a priority class;

broadcasting the selected signal frequency for the desired priority class in an intent-to-transmit-signal with a medium-access-control-layer protocol from the first station to other stations on the network during a medium access control protocol open-contention-interval;

receiving on the first station with the medium access control protocol a combined-contention-signal including a plurality of priority class intent-to-transmit-signals, wherein the combined contention signal is a superposition of a plurality of priority class intent-to-transmit-signals from others stations in the network system;

decoding a plurality of priority class intent-to-transmit-signal frequencies from the combined-contention-signal;

determining whether the first station has selected the highest signal frequency for the desired priority class from the plurality of priority class signal frequencies in the combined-contention-signal, and if so,

transmitting data from the first station to the transmission medium as data for the desired priority class.

29. (Currently Amended) A computer readable medium having stored therein instructions for a causing a central processing unit on a station to execute the method of claim 28.

30. (Previously Presented) The method of claim 28 wherein the transmission medium is a coaxial cable.

31. (Previously Presented) The method of claim 28 further comprising:

determining whether the first station has selected the highest signal frequency for the desired priority class from the plurality of priority class signal frequencies in the combined-contention-signal, and if not,

waiting for a next medium access control protocol open-contention-interval before sending the selected signal frequency during the next medium-access-control-layer protocol open-contention-interval.

32. (Previously Presented) The method of Claim 28 wherein each priority class includes at least two signal frequencies.

33. (Currently Amended) The method of Claim 28 wherein a wherein a mix of priority classes during the open-contention interval represents at least one signal frequency from each of the priority classes.

34. (Previously Presented) The method of Claim 28 wherein a mix of priority classes during the open-contention interval does not represent a signal frequency from each of the priority classes.

35. (Previously Presented) The method of Claim 28 wherein the N-number of priority classes each include an equal number of signal frequencies.

36. (Previously Presented) The method of Claim 28 wherein selected ones of the N-number of priority classes include X-number of signal frequencies and other selected ones of the N-number of priority classes include Y-number of signal frequencies, wherein X is not equal to Y.

37. (Previously Presented) The method of Claim 28 wherein the N-number of priority classes is equal to the M-number of partitions.

38. (Previously Presented) The method of Claim 28 wherein the step of determining whether the first station has selected the highest priority class signal frequency from the plurality of priority class signal frequencies in the combined-contention-signal includes determining whether the first station is the only station that has selected a priority class signal frequency with a highest frequency during the open-contention interval.

39. (Previously Presented) In a network system with a plurality of stations, the plurality of stations having a medium access control layer above a physical layer, a method of providing multiple priority classes with a medium-access-control-layer protocol connecting the stations to a transmission medium, the method comprising the following steps:

selecting on a first station a signal frequency for a highest priority class from N-number of priority classes to be used for contending stations, wherein the N-number of priority classes are created by partitioning a set of signal frequencies available for the physical layer into M-number of partitions, wherein each partition includes a contiguous range of signal frequencies from the set of signal frequencies and each frequency in the contiguous range of signal frequencies represents a

-4-

priority class;

broadcasting the first signal frequency for the highest priority class in an intent-to-transmit-signal with a medium-access-control-layer protocol from the first station to other stations on the network during a medium access control protocol open-contention-interval;

receiving on the first station with the medium access control protocol a combined-contention-signal including a plurality of priority class intent-to-transmit-signals, wherein the combined contention signal is a superposition of a plurality of priority class intent-to-transmit-signals from others stations in the network system;

decoding a plurality of priority class intent-to-transmit-signal frequencies from the combined-contention-signal, wherein the plurality of priority class intent-to-transmit signal frequencies includes a plurality of signal frequencies for the highest priority class and a plurality of signal frequencies from selected ones of other priority classes;

determining whether the first station has selected the highest signal frequency for the highest priority class from a plurality of priority class signal frequencies in the combined-contention-signal for the highest priority class, and if so,

transmitting data from the first station to the transmission medium as data for the highest priority class.

40.   (Currently Amended) A computer readable medium having stored therein instructions for a causing a central processing unit on a station to execute the method of claim 39.

41.   (Previously Presented) The method of claim 39 wherein the transmission medium is a coaxial cable.

-5-

42. (Previously Presented) The method of Claim 39 wherein the highest priority class includes at least two signal frequencies.